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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DAVID BAGGETT, GREGORY R. GALPERIN, and  
CARL G. DEMARCKEN

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Appeal 2007-3495  
Application 09/431,674  
Technology Center 3600

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Decided: September 16, 2008

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Before WILLIAM F. PATE, III, LINDA E. HORNER, and  
ANTON W. FETTING, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF THE CASE

David Baggett et al. (Appellants) seek our review under 35 U.S.C. § 134 of the final rejection of claims 1-34. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

## SUMMARY OF DECISION

We AFFIRM-IN-PART.

### THE INVENTION

The Appellants' claimed invention relates to the cost-effective use of multiple sources of seat availability information to produce high-quality answers in response to travel planning queries, such as airline reservations (Spec. 3:13-17). Claims 1 and 11, reproduced below, are representative of the subject matter on appeal.

1. A travel planning system comprises:
  - a computer system, comprising:
    - a processor; and
    - a memory storing processes for executing on the processor, the processes comprising:
      - a scheduling process to provide a set of instances of transportation that satisfy a user query; and
      - an availability process that accesses seat availability information from multiple sources of seat availability information, receives the instances of transportation and uses results from a first source of the multiple sources of seat availability information for a mode of transportation to determine a set of instances of transportation for which a seat is available from the received instances of transportation;
      - determines quality properties of the availability information from the first source of seat availability information, with the quality

properties including at least one of confidence,  
precision and validity; and

determines, based on the quality properties,  
whether the first source of seat availability  
information is reliable, and if the results are not  
reliable, the availability process executes a second  
set of seat availability queries to the first source or  
a different one of the multiple sources of seat  
availability information based on the outcome of  
determining quality properties, to provide a second  
set of instances of transportation for which a seat is  
available.

11. The travel planning system of claim 1  
wherein the availability process:

speculatively determines the travel options  
using availability data that is determined to be low-  
quality data as though the data were high-quality  
data.

## THE REJECTIONS

The Examiner relies upon the following as evidence of  
unpatentability:

Hornick	US 5,270,921	Dec. 14, 1993
Lynch (Lynch '114)	US 5,839,114	Nov. 17, 1998
Walker	US 5,897,620	Apr. 27, 1999
Slotznick	US 5,983,200	Nov. 9, 1999
Lynch (Lynch '094)	US 6,119,094	Sep. 12, 2000

The following rejections are before us for review:

1. Claims 11-13 are rejected under 35 U.S.C. § 112, second paragraph as  
being indefinite.

2. Claims 1-4, 11, 13, 15, 16, 19, 21-23, 26, and 29-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lynch '094.
3. Claims 5-8, 10, 18, 20, 25, and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lynch '094 and Lynch '114.
4. Claims 9, 17, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lynch '094 and Walker.
5. Claims 12, 33, and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lynch '094 and Hornick.
6. Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Lynch '094 and Slotznick.

### *I. Indefiniteness*

#### A. ISSUE

The Examiner found that claims 11-13 are indefinite because it is unclear what is meant by “low-quality data” and “high-quality data” and how the system/method would process these data in a similar or differential manner (Ans. 4). The Appellants assert that the metes and bounds of claims 11-13 are clear because “[o]ne of ordinary skill in the art would understand [in view of the Specification] that low quality is, e.g., where the quality (age/freshness, confidence, precision, or validity) is not as good as a source with higher quality, e.g., (age/freshness, confidence, precision, or validity)” (App. Br. 9). The Appellants further assert that the Specification “teaches to use the low quality speculatively guessed data as if it were high quality data,

to provide some overall computational benefits” (App. Br. 10). The issue before us is whether the Appellants have shown that the Examiner erred in rejecting claims 11-13 under 35 U.S.C. § 112, second paragraph. In particular, this issue turns on whether those skilled in the art would understand what is meant by low-quality data and high-quality data when the claim is read in light of the Specification.

## B. FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. “Low” and “high” are terms of degree.
2. The Appellants’ Specification describes various sources for availability data, but does not specify which sources contain high quality data and which source contain low quality data:

The availability process 70 runs on the server 12 and access an availability system 66 of one or more airlines (generally each airline will have its own availability system) by sending availability queries over the network 22 (FIG. 1). The system 10 also includes other availability sources 65 such as an availability predictor based upon a cache or database of stored availability queries 65a, a predictive model of availability 65b and/or a simulation of an availability process 65c or an actual availability process 65d running as a local process to the server process 12.

(Spec. 8:10-19).

3. The Appellants' Specification in some instances associates the quality of data with the cost for that data, but it fails to make clear a standard by which to evaluate what is low cost and what is high cost. See e.g., Spec. 2:29-32 ("The invention permits use of inexpensive, but lower-quality data, to guide later queries to more expensive higher-quality data so as to reduce cost without reducing the quality of the final travel planning result"); Spec. 9:18-20 ("Typically, the first sources are lower cost, lower quality sources, while the last sources are more expensive, higher quality sources"); and Spec. 17:6-11 ("The process 70d makes use of the low-quality low-cost source of availability information 103, assume every seat is available in every booking class. Computation proceeds as if the low-quality speculatively guessed data were high quality, in the sense that the origin of the data does not affect the computational processes.")
4. The Specification further describes that the properties by which to evaluate the quality of data include "age/freshness, confidence, precision, or validity" (Spec. 8:24-27).

### C. PRINCIPLES OF LAW

The test for definiteness under 35 U.S.C. § 112, second paragraph, is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." *Orthokinetics, Inc. v. Safety*

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*Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted).

Definiteness problems often arise when words of degree are used in a claim. That some claim language may not be precise, however, does not automatically render a claim invalid. When a word of degree is used the [factfinder] must determine whether the patent's specification provides some standard for measuring that degree. The [factfinder] must decide, that is, whether one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification.

*Seattle Box Co. v. Indust. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984) (affirming the trial court's determination that an expert would know the limitations of the claims because the specification clearly sets forth a standard for measuring the degree used in the claim language). Even if a person of ordinary skill would need to experiment so as to determine the limits of a patent's claims, the claims would not be invalid under section 112. *See, e.g., W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1557 (Fed. Cir. 1983).

#### D. ANALYSIS

Claim 11 recites that the availability process speculatively determines the travel options using availability data that is determined to be low-quality data as though the data were high-quality data. “Low” and “high” are words of degree (Fact 1). Although the Appellants' Specification describes sources



for the availability data, it does not teach which of the enumerated sources contain “low-quality” data versus “high-quality” data (Fact 2). The Specification, in some instances, associates low-quality data with relatively less expensive sources than high-quality data, but it fails to make clear a standard by which to evaluate what is low cost and what is high cost (Fact 3). What is high cost to one person having ordinary skill in the art may be considered to be low cost to another. The Specification further describes the properties by which to evaluate the quality of data (Fact 4). This disclosure is merely a recitation of properties (e.g., age/freshness, confidence, precision, or validity), but it does not provide a standard that incorporates these properties to measure the quality of data.

For instance, the Appellants’ Specification fails to provide a standard by which one of ordinary skill in the art would determine whether data from an availability predictor based upon a cache or database of stored availability queries 65a is high quality data or low quality data. This data from source 65a may be of higher quality than data from source 65b, but of lower quality than data from source 66. As such, one having ordinary skill in the art, reading the Specification, would not understand what is encompassed by low-quality data and high-quality data when claim 11 is read in light of the Specification. Thus, we sustain the rejection of claim 11, and its dependent claims 12 and 13, as indefinite for failing to particularly point out and distinctly claim that which the Appellants consider to be the invention.

## E. CONCLUSION

We conclude the Appellants have failed to show that the Examiner erred in rejecting claims 11-13 under 35 U.S.C. § 112, second paragraph.

### *II. Obviousness*

#### A. ISSUE

The Examiner found that Lynch '094 discloses each and every element of claims 1-4, 11, 13, 15, 16, 19, 21-23, 26, and 29-32, except that it does not expressly disclose whether a single component performs all of the recited functions or whether these functions are carried out by more than one component. The Examiner concluded that it would have been obvious to modify the system of Lynch '094 to have the functions performed by a single availability component to maximize the use of each component in a system with limited resources (Ans. 4-16).

The Appellants argue that the Examiner erred in this rejection because Lynch '094 does not describe or suggest “an availability process that accesses seat availability information from multiple sources of seat availability information, ... and uses results from a first source of the multiple sources of seat availability information ... to determine a set of instances of transportation for which a seat is available ... determines quality properties of the availability information from the first source ...; and determines, based on the quality properties, whether the first source of seat availability information is reliable” (Reply Br. 2; *see also* App. Br. 12-13). In particular, the Appellants contend that Lynch '094 retrieves its data from

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computer reservation services (CRSs), which in turn would get the data from an airline's yield or revenue management system, which are known, correct sources of seat availability data, and thus it would be illogical to modify Lynch '094 to determine quality properties of the availability information or determine whether the first source was reliable, because Lynch '094 already receives the data known to have the highest quality from the known reliable sources (CRSs) (*id.*).

The Examiner responded that the purpose of Lynch '094 is to retrieve inventory and determine a plurality of low-cost alternate travel arrangements and one having ordinary skill in the art would have been motivated to include various types of seat availability sources to maximize the likelihood that the system will identify a plurality of low-cost travel arrangements for the customer (Ans. 29). The Examiner further found that the update module in Lynch '094 at least suggests that outdated availability data could make the data unreliable (Ans. 31).

The Examiner likewise relied on this reasoning for the rejections of claims 5-8, 10, 18, 20, 25, and 27 as unpatentable over Lynch '094 and Lynch '114, claims 9, 17, and 24 as unpatentable over Lynch '094 and Walker, claims 12, 33, and 34 as unpatentable over Lynch '094 and Hornick, claim 14 as unpatentable over Lynch '094 and Slotnick, and claim 28 as unpatentable over Lynch '094 and Official Notice.

The issue before us is whether Lynch '094 discloses or suggests accessing seat availability information from multiple sources, using information from a first source to provide first set of instances of

transportation, determining the quality of the information from the first source and whether this information is reliable, and if the results are unreliable, using information from another source to provide a second set of instances of transportation.

## B. ADDITIONAL FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence.

5. Lynch '094 discloses an automated system to identify a plurality of alternate low-cost travel arrangements for a customer (Lynch '094, col. 2, ll. 56-60).
6. The system accesses one or more computer reservation systems (CRSs) in order to obtain inventory information regarding, for example, the availability and listed rates of various travel arrangements, such as inventory information on airline flights, airline carriers providing the flights, fare classes available on the flights, and seat availability (Lynch '094, col. 2, ll. 60-64, col. 6, ll. 31-38, and col. 8, ll. 28-32).
7. The system includes an inventory update sub-module which determines if a pre-determined time has elapsed since inventory information was last obtained from the CRSs, and if the time has elapsed, the system reads data from one or more CRSs and updates the inventory data structure in the database using information obtained from the CRSs (Lynch '094, col. 6, ll. 6-40).

8. The inventory update sub-module then trains the genetic algorithms by providing the most current pool of candidate solutions (i.e., the travel arrangements specified in the most recently obtained inventory information) to the genetic algorithms (Lynch '094, col. 6, ll. 53-56).
9. The system then receives a travel request from a user, e.g., a travel agent, inputs the parameters specified in the travel request into the genetic algorithms, which genetic algorithms produce a set of parameters which can be used to identify suitable travel arrangements, and uses information retrieved from the inventory data structure of the database to identify all of the alternate travel arrangements that fall within the parameters output by the genetic algorithm (Lynch '094, col. 7, ll. 8-49).
10. Thus, Lynch '094 discloses performing a single query against its cache of inventory information (a cache query) collected from one or more CRSs, and does not disclose performing live queries directly against a CRS or other database (a live query).
11. Lynch '094 does not determine the quality of information from any source, nor does it execute a second query if the results from the first query are unreliable.

### C. PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such

that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

In rejecting claims under 35 U.S.C. § 103(a), the examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992); *see also In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the appellant. *See Oetiker*, 977 F.2d at 1445; *see also Piasecki*, 745 F.2d at 1472. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *Id.*

#### D. ANALYSIS

Independent claim 1 recites a travel planning system having an availability process that determines whether a first source of seat availability information is reliable, and if the results are not reliable, executes a second

set of seat availability queries to provide a second set of instances of transportation for which a seat is available. Independent claim 15 likewise recites a computer program product that determines quality of a first set of seat availability information from a first source of availability information, and if the quality of the seat availability information is low, executes a second set of seat availability queries to provide a second set of seat availability information. The method of independent claim 21 similarly recites evaluating a quality measure of seat availability information received from a first source of seat availability information and producing a second set of seat availability queries to send to a different source of seat availability information based on the evaluation of the quality of the information from the first source.

The system of Lynch' 094 does not produce a second set of seat availability queries as claimed, nor has the Examiner provided a reason with rational underpinning to explain why one having ordinary skill in the art would have modified the system of Lynch' 094 to do so. In particular, the automated system disclosed in Lynch '094 creates a cache of inventory data taken and periodically updated from one or more computer reservation systems (Facts 5-7). Lynch's system then submits a single query against the data contained in Lynch's inventory data cache to determine a set of travel arrangements (Facts 8-10). Lynch '094 does not disclose evaluating the results obtained from this inventory data cache and if the results are unreliable or the quality of the data in the cache is determined to be low,

executing a second set of queries to provide a second set of instances of transportation for which a seat is available (Fact 11).

Further, the Examiner has failed to provide a reason why one having ordinary skill in the art at the time of the invention would have modified the system of Lynch '094 to execute a second set of queries as claimed. The Examiner's reasoning misconstrues how the system of Lynch '094 operates. In particular, the Examiner states that "it would have been obvious to one of ordinary skill in the art to [sic] that a different source or different sources of seat availability would be included in the second query based upon the quality of determination (i.e. age) of the first queries" (Ans. 13-14). We disagree with this reasoning for two reasons. First, it appears from our reading of Lynch '094 that all of the queries are made against Lynch's own inventory cache, so that even if the system of Lynch '094 updates its inventory data cache with new data between different sets of queries, the system is still executing the queries against the same source of data (*viz.*, the inventory data cache) (Fact 8). Second, Lynch '094 does not disclose or suggest that the execution of a second set of queries is contingent on an evaluation of the quality of the data from a first source (Fact 11). As such, the Appellants have persuaded us of error in the Examiner's rejection of independent claims 1, 15, and 21 as unpatentable over Lynch '094. The rejection of dependent claims 2-4, 11, 13, 16, 19, 22, 23, 26, and 29-32 relies upon the underlying rejection of independent claims 1, 15, and 21. Thus, we also reverse the examiner's rejection of these dependent claims. *See In re*



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*Fine*, 837 F.2d 1071 (Fed. Cir. 1988) (If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim dependent therefrom is nonobvious).

The remaining rejections of dependent claims 5-8, 10, 18, 20, 25, and 27 over Lynch '094 and Lynch '114; claims 9, 17, and 24 over Lynch '094 and Walker; claims 12, 33, and 34 over Lynch '094 and Hornick, claim 14 over Lynch '094 and Slotznick, and claim 28 over Lynch '094 and Official Notice all rely on the Examiner's same misapplication of the disclosure of Lynch '094 to support the rejections. The Examiner does not show how any of the additional references relied upon in these rejections cure the deficiencies of the Lynch '094 patent as described *supra*. As such, the Examiner has failed to set forth a prima facie case of unpatentability of these claims.

#### E. CONCLUSIONS

The Appellants have shown that the Examiner erred in rejecting as unpatentable under 35 U.S.C. § 103(a): claims 1-4, 11, 13, 15, 16, 19, 21-23, 26, and 29-32 over Lynch '094, claims 5-8, 10, 18, 20, 25, and 27 over Lynch '094 and Lynch '114; claims 9, 17, and 24 over Lynch '094 and Walker; claims 12, 33, and 34 over Lynch '094 and Hornick, claim 14 over Lynch '094 and Slotznick, and claim 28 over Lynch '094 and Official Notice.

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### DECISION

The decision of the Examiner to reject claims 11-13 is affirmed, and the decision of the Examiner to reject claims 1-10 and 14-32 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

### AFFIRMED-IN-PART

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